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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/596,161

06/01/2006

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EXAMINER

ALEJANDRO MULERO, LUZ L

ART UNIT

PAPER NUMBER

1792

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DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/596,161	<b>Applicant(s)</b> HAYASHI ET AL.	
	<b>Examiner</b> Luz L. Alejandro	<b>Art Unit</b> 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 6/01/06 (pre-amendment).
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>0606</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 3, 5 and 9 are rejected under 35 U.S.C. 102(e) as being anticipated by Brown et al., US 2004/0018740.

Brown et al. shows the invention as claimed including a plasma etching apparatus comprising: a plasma generator, the plasma generator comprising: a cylinder; and a coil 112/112' wound around the circumference of the cylinder; wherein a process gas is introduced into the cylinder, an AC current is passed through the coil, and the plasma of the process gas is generated inside the cylinder, and wherein in one turn 112a-112f of the coil, at least two kinds of angles are formed between the winding direction of the coil and the face perpendicular to the axis of the cylinder, and a first winding region 150/150' having the angle within a predetermined range and a second winding region 152/152' having the angle larger than the maximum angle of the first winding region are provided (see, for example, figs. 4-9 and their descriptions).

With respect to claims 3, 5 and 9, note that the ratio of the first winding region in the whole circumference of the cylinder is 75% or more (see, for example, paragraphs 0010, 0028 and 0033), and the plasma of the process gas generated in the plasma generator is used.

Claims 2 and 8 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Brown et al., US 2004/0018740.

Brown et al. is applied as above and further disclose that the first winding region is flat which appears to be an angle of 0 degrees (see, for example, paragraphs 0010,

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0011 and figs. 5 and 9). Furthermore, and this notwithstanding, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to comprise the first winding region having the claimed predetermined angle range in order to make the first winding region as flat as possible, thereby improving the process uniformity.

Claims 4, 7 and 10 are rejected under 35 U.S.C. 102(e) as anticipated by Brown et al., US 2004/0018740 or, in the alternative, under 35 U.S.C. 103(a) as obvious over the Admitted Prior Art (APA).

Brown et al. is applied as above and further discloses that the adjacent wires of the coils are spaced at a pitch of  $\frac{3}{4}$  inch between turns (see paragraph 0031) which seems to be a sufficient distance so that discharge does not occur between the adjacent wires of the coil. This notwithstanding, the APA discloses that the coil is wound at a predetermined pitch so that no discharge occurs between the adjacent wires of the coil (see paragraph bridging pages 4-5 of the specification of the instant claimed application). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the coil of the apparatus of Brown et al. as to have the winding pitch of the coil being not less than the distance at which no discharge occurs between the adjacent wires of the coils in order to optimize the apparatus and the processes performed therein by avoiding discharge between adjacent wires/windings of the coil.

Claim 6 is rejected under 35 U.S.C. 102(e) as anticipated by Brown et al., US 2004/0018740 or, in the alternative, under 35 U.S.C. 103(a) as obvious over Admitted Prior Art (APA).

Brown et al. is applied as above and further disclose that the first winding region is flat which appears to be an angle of 0 degrees (see, for example, paragraphs 0010, 0011 and figs. 5 and 9). Furthermore, and this notwithstanding, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to comprise the first winding region having the claimed predetermined angle range in order to make the first winding region as flat as possible, thereby improving the process uniformity.

Additionally, Brown et al. is applied as above and further discloses that the adjacent wires of the coils are spaced at a pitch of  $\frac{3}{4}$  inch between turns (see paragraph 0031) which seems to be a sufficient distance so that discharge does not occurs between the adjacent wires of the coil. This notwithstanding, the APA discloses that the coil is wound at a predetermined pitch so that no discharge occurs between the adjacent wires of the coil (see paragraph bridging pages 4-5 of the specification of the instant claimed application). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the coil of the apparatus of Brown et al. as to have the winding pitch of the coil being not less than the distance at which no discharge occurs between the adjacent wires of the coils in order to optimize the apparatus and the processes performed therein by avoiding discharge between adjacent wires/windings of the coil.

Claims 1, 3, 5 and 9 are rejected under 35 U.S.C. 102(e) as being anticipated by Tachino et al., US 2002/0023896.

Tachino et al. shows the invention as claimed including a plasma etching apparatus comprising: a plasma generator, the plasma generator comprising: a cylinder 14; and a coil 23/61 wound around the circumference of the cylinder; wherein a process gas is introduced into the cylinder, an AC current is passed through the coil, and the plasma of the process gas is generated inside the cylinder, and wherein in one turn of the coil, at least two kinds of angles are formed between the winding direction of the coil and the face perpendicular to the axis of the cylinder, and a first winding region 31-32/63-64/62-63 having the angle within a predetermined range and a second winding region 33/62/72 having the angle larger than the maximum angle of the first winding region are provided (see, for example, figs. 2b, 7b and 8b and their descriptions).

With respect to claims 3, 5 and 9, note that the ratio of the first winding region in the whole circumference of the cylinder is 75% or more (see, for example, paragraphs 0041), and the plasma of the process gas generated in the plasma generator is used.

Claims 2 and 8 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Tachino et al., US 2002/0023896.

Tachino et al. is applied as above and further disclose that the first winding region is flat which appears to be an angle of 0 degrees (see, for example, figs. 2b, 7b and 8b). Furthermore, and this notwithstanding, it would have been obvious to one of

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ordinary skill in the art at the time the invention was made, to comprise the first winding region having the claimed predetermined angle range in order to make the first winding region as flat as possible, thereby improving the process uniformity.

Claims 4, 7 and 10 are rejected under 35 U.S.C. 103(a) as obvious over Tachino et al., US 2002/0023896 in view of the Admitted Prior Art (APA).

Tachino et al. is applied as above and further discloses that the adjacent wires of the coils are spaced at a predetermined spacing (see figs. 2b, 7b and 8b, and paragraph 0040). The APA discloses that the coil is wound at a predetermined pitch so that no discharge occurs between the adjacent wires of the coil (see paragraph bridging pages 4-5 of the specification of the instant claimed application). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the coil of the apparatus of Tachino et al. as to have the winding pitch of the coil being not less than the distance at which no discharge occurs between the adjacent wires of the coils in order to optimize the apparatus and the processes performed therein by avoiding discharge between adjacent wires/windings of the coil.

Claim 6 is rejected under 35 U.S.C. 103(a) as obvious over Tachino et al., US 2002/0023896, as applied to claims 2 and 8 above, and further in view of the Admitted Prior Art (APA).

Tachino et al. is applied as above and further discloses that the adjacent wires of the coils are spaced at a predetermined spacing (see figs. 2b, 7b and 8b, and



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paragraph 0040). The APA discloses that the coil is wound at a predetermined pitch so that no discharge occurs between the adjacent wires of the coil (see paragraph bridging pages 4-5 of the specification of the instant claimed application). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the coil of the apparatus of Tachino et al. as to have the winding pitch of the coil being not less than the distance at which no discharge occurs between the adjacent wires of the coils in order to optimize the apparatus and the processes performed therein by avoiding discharge between adjacent wires/windings of the coil.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luz L. Alejandro whose telephone number is 571-272-1430. The examiner can normally be reached on Monday to Thursday from 7:30 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Luz L. Alejandro/  
Primary Examiner, Art Unit 1792

January 23, 2009